

CTO OUTLOOK

Pushing the chemicals technology envelope

Water treatment chemicals specialist Solenis is preparing to roll out its predictive analytics solution as the next step in its digital strategy. CTO Tim Wood tells GWI about the varying dynamics around innovation between the municipal and industrial sectors.



TIM WOOD

Chief Technology Officer, Solenis

Tim Wood joined Solenis in 2014 as senior vice president and chief technology officer, where he is responsible for global R&D and the global customer applications organisation, which includes seven regional technical facilities. Earlier, Dr. Wood was vice president of R&D for Solenis' predecessor company, Ashland Water Technologies. He previously served as global R&D director for Dow Water and Process Solutions.

What market drivers have been the most important in shaping the direction of your technology strategy?

Our customers operate in water-intensive industries, such as pulp and paper, power and mining. Our job is to provide them with solutions to enhance the sustainability of their operations by improving productivity and resource-efficiency, as well as helping them meet emerging regulatory demands. That's where a lot of our innovation has been focused over the last several years, and we've continued to bring forward new technologies for cooling and boiler water management, as well as treatment of influent and effluent water.

In addition, industries such as biorefining and mining have been looking for ways to improve yield from their operations, and we have responded by developing new process aids, for example, to enhance corn oil production, or to enable extraction of high-value ores. More recently, the need for improved monitoring and control technologies and the emergence of predictive analytics tools have become important drivers.

What are the key technology areas you are looking at in your R&D activity and why?

We do a lot of innovation on the chemicals side of our business. There's a constant evolution of the technology going on there. In some cases, it's taking existing platforms and incrementally advancing them, trying to stay in step with – or ahead of – our customers' emerging needs. In other cases, we need to develop entirely new technology platforms. An example of this would be in the mining industry, where we have developed new process aids to improve the efficiency of ore extraction processes.

Beyond chemistry, we have made big strides in sensing and control technologies over the last several years. Our OnGuard platform is a suite of technologies that allows our customers to directly measure formation of, for example, biofilm or scale in a cooling tower, even at very low levels. This is in contrast to current approaches, which use proxy measurements to approximate scale or biofilm formation, and can often lead to improper dosing of chemistry.

Our next frontier is in the area of predictive analytics, harnessing the power of our customers' own data to help them bet-

ter anticipate and improve their results. Our first foray into this area will be in the pulp and paper industry, and we will expand from there into industrial water treatment.

How much do you spend on R&D and do you intend to alter that spend going forward?

We invest just over 2% of sales, and we are holding that steady. We have a commitment to that continued investment and have done so for some time. Our business views technology and new products as a pillar of what we do. This year about 24% of our sales came from products invented in the last 5 years, which is pretty good in our industry. Our target is to achieve 25% during 2018.

How can the performance of water treatment chemicals be improved?

As water-stressed environments become more a part of the discussion, there is a need for products that are tolerant across a wider variation of conditions. Our latest cooling water products, for example, are effective across a broad range of water temperatures and chemistries including ionic loading and suspended solids content. Another area of development is around improving the environmental profile of these chemicals, for example, to reduce levels of zinc and phosphorus.

How are you looking to strengthen Solenis' water portfolio?

We acquire technology through both organic innovation and acquisitions. We are always doing R&D and always will, but there are instances where we can move faster if we acquire a piece of technology. Recently we have invested heavily in the defoamer arena, which serves both our industrial water and pulp and paper businesses. We recently acquired two specialty defoamer companies in Europe, Lostris/Wester Blend and Nopco. We're always on the hunt for bolt-on technologies or channels that enhance our position in important markets.

Where do you look for new ideas for innovation outside of Solenis?

We are agnostic as to where good technologies come from, and we have a long legacy of successfully sourcing technology from ►

outside Solenis. As an example, the technology behind our OnGuard ultrasound sensing technology was originally developed for use in the medical field. We partnered with an outside firm to develop and commercialise it for use in our markets.

How is it different developing and selling new technologies into the municipal market versus industrial markets?

The dynamics in the two industries are quite different. In the industrial markets in which we participate, we are very often providing a solution which directly impacts customers' productivity and operational efficiency. These deliver improvements directly to their bottom line, so the customer has a strong incentive to collaborate with us to achieve those outcomes. We, in turn, have an incentive to differentiate ourselves so that our solution is better than what our competitors can offer. In contrast, the bid process that drives much of the con-

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versation in the municipal market encourages all suppliers to bring forward similar technologies, and compete – often on price – against a certain set of specifications. It's an entirely different set of incentives around developing new technologies.

Of the industrial verticals that you operate in, which one(s) can benefit from new technology?

There are opportunities for innovation in all of them. Water management is a huge trend in the pulp and paper industry, for example. The American Forestry & Paper Association set a goal back in 2005 for American paper mills to reduce water

usage by 12%. A lot of progress has been made toward that goal, but there is much more to do, and we're helping our customers get there.

What do you think will be the game changing technologies in the water sector in the next ten years? What is ripe for disruption?

We think that the topic of digitisation/predictive analytics will be a game-changer. These tools will offer profound insights into complex processes leading to better products, lower costs and improved sustainability. We plan to focus on specific applications where we think these tools will provide an edge to our customers, then work with them and with outside technology partners to develop customised solutions.

In many industries, we're in our customers' facilities every day, helping them solve problems, so this is a very natural next step in how we deliver support to them. We will be launching some of these new solutions into the pulp and paper industry this year, and will be looking to expand into other markets as we build the platform out further.

How can technology commercialisation failures be avoided?

New technologies often fail not because they don't work, but because they don't deliver enough value to the customer. Unfortunately, this sometimes isn't discovered until the technology is in the final stages of validation and commercialisation, and much of the development investment has already been made. In many cases, these misfires occur because the customers' needs were not fully understood from the start. We believe the best way to guard against such failures is to do the right upfront work to make sure we really understand the problem we're trying to solve, and the guardrails within which we need to solve it.

We do detailed customer interviews to understand needs and develop value propositions to confirm the value to both the customer and Solenis. We do this at the start of a project, and then re-confirm as the project progresses. This also helps to keep the customer part of the process all the way through the project. While this isn't a guarantee of success, we think it helps to stack the deck in our favour. ■

ALWAYS ON GUARD

Solenis believes it has a significant edge over competitors such as Nalco and Suez Water Technologies with its OnGuard analyser, which monitors corrosion and biofouling in real time, optimising chemical dosage.

